

PRACTICE EXERCISES

Factor by grouping.

1. $x^2 - ax + bx - ab$
2. $br + b + cr + c$
3. $2ms + 3mt - 4ns - 6nt$
4. $3cx - bx + 3cy - by$
5. $f^2 + 2fg + mf + mg + g^2$
6. $4r^2 - 12rs - 6s + 4r + 9s^2$
7. $a^2 - 4ab + 4b^2 - a + 2b$
8. $t^2 - s^2 + rs - rt$
9. $a^3 + b^3 + a^2 - b^2$
10. $a^3 + b^2 - b^3 - a^2$
11. $p^3 - 4q^2 + p^2 - 8q^3$
12. $w^3 + 27z^3 - w^2 + 9z^2$
13. $25x^2 - 10x + 1 - 4y^2$
14. $x^2 + 2xy + y^2 - 4z^2$
15. $a^2 + 4b^2 - 25c^2 + 4ab$
16. $x^3 + x^2 - 4x - 4$

Algebra 2
Unit #5
WS #6

Factor completely.

17. $9x^2 - 36$
18. $18a^2 - 8b^2$
19. $12m^2 - 75n^2$
20. $64c^2 - 16d^2$
21. $12x^2 + 36x + 27$
22. $16x^2 - 80x + 100$
23. $2a^2b - 16ab + 32b$
24. $-x^3 - 8$
25. $-x^3 + 27$
26. $ax^2 - 8ax + 12a$
27. $3x^2 - 24x - 27$
28. $18bm^2 + 24bm - 10b$
29. $4f^2 - 20f + 24$
30. $3x^2 + 24x + 45$
31. $16x^4 + 4x^2 - 2$
32. $4ax^4 - 22ax^2 + 10a$
33. $-x^2 + 5x - 4$
34. $-36x^4 + 25x^2 - 4$
35. $5x^3 - 6y^3 + 6x^2y - 5xy^2$
36. $3p^3 - 6q^3 + 6p^2q - 3pq^2$
37. $y^5 - 16y^3 + 8y^2 - 128$
38. $ax^2 - a + bx^2 - b$
39. $a^2 - 4ab + 4b^2 - c^2 - 2cd - d^2$
40. $8x^3 + 4x^2 + 4xz + z^2 + z^3$
41. $k^4 - 1$
42. $k^8 - 16$
43. $x^2 - 13xy + 36y^2$
44. $100x^4 - 41x^2y^2 + 4y^4$
45. $-36c^4 + 289c^2 - 400$
46. $-5p^4 + 2000$
47. $-6q^5 - 6000q^2$
48. $20x^4 - 45x^2 - 500$
49. $9y^8 - 26y^4 + 16$
50. $x^4 - 18x^2 + 81$
51. $-81p^3 + 375$
52. $-5y^3 + 110y^2z - 605yz^2$
53. $16x^4 - 200x^2 + 625$
54. $60x^2 - 64xy - 60y^2$

Factor completely. First factor out a rational number. Then factor the binomial or trinomial so the terms have integral coefficients.

55. $\frac{1}{2}x^2 - \frac{1}{2}$
56. $\frac{x^3}{3} - \frac{x^2}{3} - \frac{2x}{3}$
57. $1.8x^2 + 0.3x - 10.5$
58. $0.4y^3 - 0.4y^2 + 0.1y$

Factor completely. Assume all exponents are positive integers.

59. $6x^{4a} - 54y^{4b}$
60. $x^{7c+21} + 5x^7$